

CLAIMS

1. Colloidal dispersion of calcium phosphate platelets comprising at least one polymer which complexes calcium and in which the length of the platelets, L, is between 5 and 500 nm and in which the thickness of the platelets is between 0.5 and 20 nm.

2. Colloidal dispersion according to claim 1, characterized in that the length of the platelets, L, is between 5 and 300 nm, preferably between 5 and 200 nm.

3. Colloidal dispersion according to either of the preceding claims, characterized in that the thickness of the platelets is between 0.5 and 15 nm.

4. Colloidal dispersion according to one of the preceding claims, characterized in that it comprises calcium phosphate platelets exhibiting a monetite or apatite structure.

5. Colloidal dispersion according to one of the preceding claims, characterized in that it comprises at least one polymer which complexes calcium having anionic functional groups, preferably carboxylate, phosphate or phosphonate functional groups.

6. Colloidal dispersion according to one of the preceding claims, characterized in that it comprises at least one polymer which complexes calcium chosen from polymers with a peptide backbone of

polyaspartic acid, polyglutamic acid, polylysine or  
polyglycine type, or else from homopolymers and  
copolymers of acrylic acid or methacrylic acid,  
polyacrylic acid or polymethacrylic acid, or else from  
5 copolymers of the polyacrylic-polymethacrylic,  
polyacrylic-polyhydroxyethylacrylic or polyacrylic-  
polyacrylamide type, or else from natural and/or  
modified polysaccharide polymers, such as guar gum,  
carboxymethylcellulose or xanthan gum, or else from  
10 modified polysaccharide polymers having phosphate or  
phosphonate functional groups, or else from peptide  
polymers comprising phosphate functional groups.

7. Colloidal dispersion according to one of  
the preceding claims, characterized in that it exhibits  
15 a molar ratio  $R_1$ , moles of anionic functional groups  
present in the polymer to moles of calcium, of between  
0.0001 and 0.1.

8. Colloidal dispersion according to one of  
the preceding claims, characterized in that it  
20 comprises at least one polymer which complexes calcium  
having a molecular weight, MW, of between 1000 and  
20 000 g/mol, preferably of between 1000 and  
5000 g/mol.

9. Colloidal dispersion according to one of  
25 the preceding claims, characterized in that it  
comprises at least one dispersing agent.

10. Colloidal dispersion according to claim

9, characterized in that it comprises at least one dispersing agent chosen from polyphosphates, in particular sodium tripolyphosphate.

11. Colloidal dispersion according to either  
5 of claims 9 and 10, characterized in that the dispersion exhibits a molar ratio  $R_2$ , moles of dispersing agent to moles of calcium, of between 0.001 and 0.5, preferably of between 0.001 and 0.1.

12. Colloidal dispersion according to one of  
10 the preceding claims, characterized in that it comprises doping elements chosen from alkaline earth metal elements, such as strontium or magnesium, rare earth metal elements, such as yttrium, or elements with an atomic number of between 57 and 71.

13. Calcium phosphate platelets obtained by  
15 drying the colloidal dispersion according to claims 1 to 12.

14. Process for preparing the dispersions  
according to claims 1 to 12, characterized in that it  
20 comprises the following stages:

- i) preparing a solution of calcium salts, the pH of which is between 4 and 6;
- ii) adding a phosphate solution to the solution  
obtained in stage i) over a period of time of  
25 between 30 minutes and 4 hours, so as to obtain a calcium to phosphorus molar ratio of between 1 and 2.5 and while keeping the pH

constant at a value of between 4 and 6;  
iii) heat treating the dispersion obtained in  
stage ii) at a temperature of between 50°C  
and 95°C;  
5 iv) washing the dispersion obtained in stage  
iii);  
v) adding a dispersing agent to the dispersion  
obtained in stage iv);  
vi) separating the colloidal dispersion obtained  
10 in stage v);  
and in that it uses, in at least one of stages i) or  
ii), solutions comprising an ammonium ion;  
and in that at least one polymer which complexes  
calcium is added during stage i) or ii) but before  
15 stage iii).

15. Process according to claim 14,  
characterized in that the calcium solution is a  $\text{CaCl}_2$  or  
 $\text{Ca}(\text{NO}_3)_2$  solution.

16. Process according to either of claims 14  
20 and 15, characterized in that the concentration of the  
calcium solution is between 0.25M and 2.5M, preferably  
between 1.25M and 1.75M.

17. Process according to one of claims 14 to  
16, characterized in that the phosphate salt solution  
25 is a solution of ammonium phosphate or of sodium  
phosphate, in particular of  $(\text{NH}_4)_2(\text{HPO}_4)$  or  $(\text{NH}_4)(\text{H}_2\text{PO}_4)$ .

18. Process according to one of claims 14 to

17, characterized in that the calcium to phosphorus molar ratio is between 1.3 and 1.7 and more particularly is 1.66.

19. Process according to one of claims 14 to 5 18, characterized in that the temperature of the heat treatment in stage iii) is between 50°C and 95°C, preferably between 60°C and 90°C.

20. Use of the dispersions according to one of claims 1 to 12 or of the platelets according to 10 claim 13 as food additive, reinforcing filler, thermal insulation filler, pharmaceutical excipient, polishing agent, building materials, additive for oral formulations, in particular dentifrices, or encapsulating agent.